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# Introduction

The Western DataCom Co., Inc. 800 Series Quadra Press (henceforth referred to as the QP) is a synchronous data compression device designed to greatly increase throughput on existing data networks. It will compress any HDLC/SDLC protocols using the ASH™ data compression algorithm for a data rate up to 384,000 bps over one 56,000/64,000 bps telco digital line, or 512,000 bps over two 56K/64K digital or ISDN lines. Significant cost savings are realized by using less expensive 56/64K lines versus T1 lines for data transfer.

Internetworking equipment like Bridges and Routers, which do not provide compression benefit considerably from the 800 Series Quadra Press capabilities. It is equally effective in an SNA environment, compressing the output without affecting any management information being transmitted or adding any latency to the communications system.

The 800 Series Quadra Press has an additional control port for set up and diagnostic purposes. A complete self test and remote control capability operate from this port. The input interface to the Bridge, Router, Gateway, or SNA equipment is V.35 or X.21, optional interface converters can be used for RS-232.

The 800 Series Quadra Press also features a Secondary DCE port. This port may be configured as either a Backup port, which will become activated upon failure of the Primary link, or as a Load Sharing port, used to increase throughput by providing a second channel for frames which would normally be delayed waiting for a single-port device to finish transmitting the current frame.

The 800 Series Quadra Press will operate with any manufacturer's DSU/CSU or can be used with the Western DataCom Model 1814 56K DSU/CSU. In addition, the 800 Series QP will work with other types of DCE's including analogue modems, ISDN Terminal Adapters and switch 56 equipment.

# Introduction

# Introduction

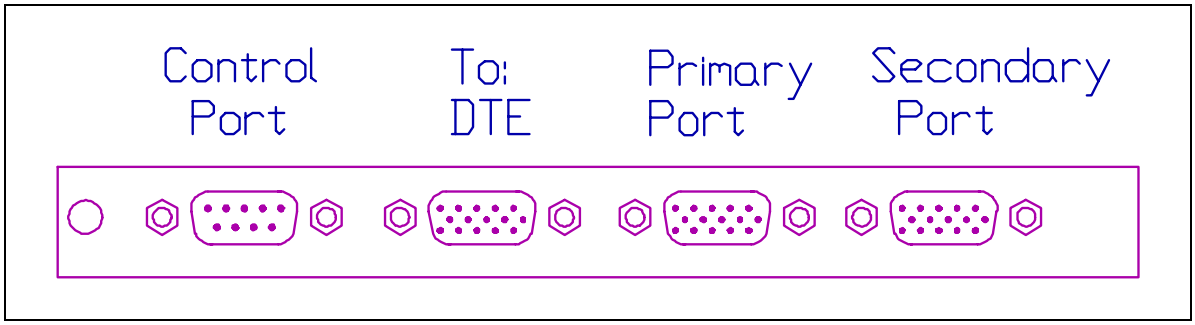



**Figure 1**: 800 Series Quadra Press Back panel

## Installation

### 1. Unpacking/Checklist

800 Series QPs are shipped in one of two ways depending on whether they are ordered alone or with the Western Datacom WA 1602 stand-alone chassis. Unpack the contents of the shipping carton.

If the 800 Series QPs were ordered alone, then in addition to this manual each unit should have the following:

1 800 Series Quadra Press
1 HD15M-to-V.35F cable (DTE port)
1 HD15M-to-V.35M cable (DCE port)
1 HD15M-to-V.35M cable(with V.35 Secondary port)
OR 1 HD15M-to-DB25M cable(with RS-232 Secondary port)
1 DB9M-to-DB25F cable (Control port)
1 Warranty Card

<u>If ordered with Western DataCom 1814 DSU/CSU</u>
1 800 Series Quadra Press
1 HD15M-to-V.35F cable (DTE port)
1 HD15M-to-DB25M cable (DCE port)
1 HD15M-to-V.35M cable(with V.35 Secondary port)
OR 1 HD15M-to-DB25M cable(with RS-232 Secondary port)
1 DB9M-to-DB25F cable (Control port)
1 Warranty Card

If the 800 Series QPs were ordered with the WA 1602 chassis, then in addition to the above, each unit will contain the WA 1602 chassis with the 800 Series QP already mounted, and the power supply.

# Getting Started

## 2. Mounting

The 800 Series QP is a rack-mount card design which is compatible with the Racal Vadic MDS-1 series chassis. Mount according to the following directions.

**The 800 Series QPs should be mounted into the chassis with the POWER OFF. If one or more QPs are already mounted in a chassis and the power is ON, make sure to shut the power OFF before mounting any other 800 Series QP units into that chassis.**

2 SLOT CHASSIS If the 800 Series QP was purchased with the WA 1602 chassis and you have just unpacked from the shipping carton, it is already mounted. Skip this step and go on to step 3. If the QP has been removed, re-mount according to the directions for the 4 slot chassis below.

4 SLOT CHASSIS To mount the QP in a 4-slot chassis, place it horizontally into a slot on the chassis, edge connector first. Carefully guide the circuit board along the set of plastic runners on the left and right side of the slot in the chassis. Continue to slide the unit forward until you feel the edge connector clamp into place. Tighten thumbscrew.

16 SLOT CHASSIS To mount the QP in a 16-slot chassis, place it vertically into a slot on the chassis, edge connector first. Carefully guide the circuit board along the set of plastic runners on the top and bottom of the slot in the chassis. Continue to slide the unit forward until you feel the edge connector clamp into place. Tighten thumbscrew.

**Mounting an 810/2** The 810/2 is the 2-port version of the 800 series of data compressors. This card must only be mounted in a chassis that is cooled by a fan. Also, no other card must be mounted in the slot immediately above (in a horizontal-mount chassis) or immediately to the left (in a vertical-mount chassis) of the 810/2. If the 810/2 is ordered with a 2-slot chassis, the chassis will contain a fan, and the 810/2 will be the only card in the chassis.

## 3. Connection to Control Port

An RS-232 control port is provided on the back of the 800 Series QP for configuration, control, and monitoring of the QP from an ASCII terminal or a PC which is running terminal emulation software. The configuration for the control port is 9600 baud, 8 data bits, no parity. Set the control terminal to this configuration.

The control port is the DB9 female connector mounted on the extreme left of the QP back panel. Refer to **1**. A DB9 male-to-DB25 female control cable is provided to allow the control port to be connected to a standard straight-thru RS-232 cable (not provided) from the control terminal.

To connect to the control port, take the DB9 male end of the control cable and plug it into the control port. Plug the DB25 male end of the RS-232 cable coming from your terminal or Com port into the opposite end(DB25 female) of the control cable.

**4. Connection to DTE port**

Make sure that power to the unit is OFF. Select the HD15 male-to-V.35 female cable. Plug the HD15 male end into the left most HD15 female connector on the backpanel, the connector to the immediate right of the control port. See **1**. Plug the other end into the V.35 DTE.

**5. Connection to DCE port**

The QP backpanel provides two HD15 female connectors on the backpanel for connection to DCEs. See **1**. With the backpanel facing you, the second HD15 connector from the right is the Primary DCE port and the extreme right connector is the Secondary port.

To connect to the DCE, first make sure that power to the unit is OFF. Take the HD15 male-to-V.35 male cable and plug the HD15 male end into the main port (the second HD15 connector from the right). Plug the V.35 male end into the DCE.

With 1814 DSU/CSU

Take the HD15 male-to-DB25 male cable and plug the HD15M end into the main port (the second HD15 connector from the right). Plug the DB25M end into the DTE port of the 1814 DSU/CSU. See 1814 manual for diagram and instructions.

**6. Connection to Secondary port**

The 800 SeriesQP Secondary port may be configured at the factory to operate as another V.35 port, or alternately, as an RS-232 port for use with a high-speed modem. The appropriate cables are provided depending on which electrical interface was ordered.

To connect to a Secondary port configured as V.35, take the HD15M-to-V.35M cable and plug the HD15 male end into the Secondary port (the first HD15 connector on the right, see **1**). Plug the V.35 male end into the backup DCE.

To connect to a Secondary port configured as RS-232, take the HD15M-to-DB25M cable and plug the HD15 male end into the Secondary port (the first HD15 connector on the right, see **1**). Plug the DB25 male end into the backup modem's RS-232 port.

This completes the installation procedure.

# Getting Started

# Getting Started

The 800 Series Quadra Press is equipped with a Secondary port which may be factory configured as another V.35 port or as an RS-232 port for use with a high-speed modem. This port will operate at up to 64Kbps. (note: secondary port is not available with an X.21 interface). The Secondary port may be used as:

1) A Backup port, providing an alternate channel for data traffic in the event of a Primary link failure.

2) A Load sharing port, providing a second channel for data traffic which will effectively increase bandwidth to the sum of the port speeds(Primary+Secondary).

The time of day and the period of days that the Secondary port is active is configurable through the use of four registers, allowing the user to restrict the use of the Secondary link, if necessary. The Secondary port is selected for Backup or Load sharing by setting the appropriate value in Register 10.

OPERATION of Secondary Port as a Backup Port

If the Primary port fails during a valid backup period (set by Registers 6-9), the Secondary port is immediately activated. DTR is asserted (raised) to the Secondary port, and the backup device is responsible for establishing a link upon being signaled in this fashion. When the 800 Series QP sees the Secondary port active, it begins using that port for data transfer. When the Primary link returns, the QP will test it. After the Primary has been active and error-free for the number of seconds set in Register 5, the QP will switch data traffic back to the Primary and drop DTR to the Secondary port. The backup device is responsible for terminating the backup link when being signaled in this fashion.

SETUP for Backup Operation

When setting up for backup operation, the following checklist should be used. One concept needs clarification, however. The definition of a backup for our purposes is: in the case of a failure of a primary link, a temporary link is established, preferably over a different medium, to maintain data traffic until the primary link returns. For example, backing up a DDS circuit over the Public Switched Telephone Network (PSTN). When data communication devices such as modems operate over the PSTN, one device (known as the ORIGINATE modem), initiates the call, and the other device(known as the ANSWER modem) receives the call. If both modems would try to originate a call to each other simultaneously, a conflict would arise which would prevent a connection.

Proper operation of the Backup feature of the 800 Series QP requires that one QP be designated as the Backup Master and the other be designated as the Backup Slave. Register 5 is used for this purpose. The Master is responsible for initiating and terminating the backup process at the proper times. The Slave takes no action upon failure of the Primary link, but it will switch data traffic to its Secondary port once a reliable backup connection has been established. Similarly, it will switch traffic back to the Primary once it has been restored.

7 . Make sure that the Secondary port is connected properly to a device with a compatible electrical interface. This will be either V.35 or RS-232, depending on which type

of Secondary port interface your 800 SeriesQP was ordered with. See **Connection to Secondary port** on page 5.

8 . Set the clock for the current time using the **SET DAY** and **SET TIME** commands if you need to place restrictions on when the Backup function will be allowed. If the clock is NOT set, the Backup function will always be active, i.e., the QP will always backup whenever the Primary fails.

9 . Set Register 10 to 0(zero) - this configures the Secondary Port as a Backup Port .

10. Set Registers 6-9 with the appropriate values to define the Backup period.

11. Set Register 5 to a value of 1-254 on one QP to designate it as the Backup Master. The value in Register 5 of the Master also controls how long the Primary link must be good before the Backup Master will switch data traffic back onto it and signal the Backup device to drop its connection. Set the Backup device connected to the Master to initiate a connection with the Slave side upon receiving DTR asserted from the Master QP.

12. Set Register 5 on the other QP to 255 to designate it as the Backup Slave. Set the Backup device connected to the Slave to automatically answer incoming calls.

NOTES:

13. The clock does NOT have a battery backup. The time set is valid only as long as there is power to the QP. If the power is turned off, the clock MUST be reset for the backup period restrictions to apply.

14. The clock should be checked for accuracy at least once a month and reset if necessary regardless of whether or not power to the device was interrupted.

15. The Master QP does NOT cycle DTR to its Backup device. If the first attempt at a backup connection fails, it is the responsibility of the Backup device connected to the Master to keep trying until a connection is established.

OPERATION of Secondary Port as a Load Sharing Port - The 810/2

If the Primary port is busy transmitting data (or more specifically, an HDLC/SDLC frame) and there are more frames available to be transmitted (during the period set by Registers 6-9), the Secondary port is used. This allows available frames, which would normally be held up waiting for a single port to finish transmitting the current frame, to be expedited across the secondary link. In order for the secondary port to become active, there must be a period of 10 seconds of high utilization on the primary port. Likewise, once the secondary port is active, there must be a period of 1 minute of low utilization on it before it becomes inactive.

# Getting Started

SETUP for Load Sharing Operation

When setting up for Load Sharing operation, the following checklist should be used.

16 . Make sure that the Secondary port is connected properly to a device with a compatible electrical interface. This will be either V.35 or RS-232, depending on which type of Secondary port interface your 800 Series QP was ordered with. See **Connection to Secondary port** on page 5.

17 . Set the clock for the current time using the **SET DAY** and **SET TIME** commands if you need to place restrictions on when the Load Sharing function will be allowed. If the clock is NOT set, the Load Sharing function will always be active, i.e., the QP will use the Secondary Port whenever the Primary ports bandwidth has been exceeded.

18 . Set Register 10 to 1(one) - this configures the Secondary Port as a Load Sharing Port .

19 . Set Registers 6-9 with the appropriate values to define the active period for Load Sharing.

NOTES:

20 . The clock does NOT have a battery backup. The time set is valid only as long as there is power to the QP. If the power is turned off, the clock MUST be reset for the Load Sharing period restrictions to apply.

21 . The clock should be checked for accuracy at least once a month and reset if necessary regardless of whether or not power to the device was interrupted.

# Getting Started

# Getting Started

The 800 Series QP is equipped with a transparent mode which allows the compression function to be disabled. In this mode, the QP simply relays frames[i] received from the DTE port to the primary[ii] DCE port and frames received from the primary DCE port to the DTE port. This mode is used primarily for debugging link problems or other problems where it is helpful to eliminate the influence of intervening devices such as the QP. Transparent mode is enabled using Register 12.

Setup for Transparent Mode

1. Set Register 12 to a 1 at both ends. Register 12 on the remote QP may be set[iii] from the local end if remote configuration has been negotiated for the current link.

2. Drop the link and allow the QPs to reconnect. When the link is re-established, transparent mode will be in effect.

NOTES

i) The CRC's are still stripped and reconstructed by the QP in transparent mode.

ii) The secondary port is disabled in transparent mode.

iii) Remote configuration is disabled in transparent mode, therefore it will not be possible to take the remote end out of this mode from the local QP. Register 12 at the remote end will have to be set to 0 from the remote end's configuration terminal.

# Getting Started

# Getting Started

Configuration and control of the QP is through a command line interface. The commands should be entered at the COMMAND> prompt. The commands are not case sensitive although they are shown in upper case here. Therefore SHOW, Show, and show will all be interpreted as the same keyword.

## The Show commands:

SHOW ID
Displays 8 character IDentification string.

SHOW S/N
Displays unit serial number.

SHOW REGS
Displays all registers in a matrix format.

SHOW REM
Displays all remote registers in a matrix format.

SHOW REG *n*
where *n* is the register number. Displays the contents of a particular register.

SHOW STAT or SHOW STATS
Displays statistics screen. For explanation, see the section entitled **The Statistics Screen**.

SHOW TIME
Displays the current day and time.

SHOW DAY
Displays the current day and time, same result as SHOW TIME above.

## The Set commands:

SET ID *string*
where *string* is an 8 character, alphanumeric string. This string is stored in EEROM. It allows user to easily identify all units.

SET REG *n v*
where *n* is the register number and *v* is the register value.

SET REM *n v*
Same as SET REG but for remote registers, where *n* is the number of the remote register to be set and *v* is its desired value.

SET TIME HH:MM:SS
where HH:MM:SS is the current time in 24-hour format (HH=00-23; MM=00-59; SS=00-59)

SET DAY d
where d is the current day; only the first three letters are necessary but it may be spelled out.
(d=SUNday, MONday, TUEsday, WEDnesday, THUrsday, FRIday, SATurday)

## Other Commands:

INIT REGS
Resets unit to factory default configuration.

DISC
Drops connection

!(Exclamation mark)
Retypes the last command line or portion not yet entered at the command line. Works like the DOS F3 key. A carriage return is not included, so the command will not be executed immediately, and may be edited.

<Control key>R
Software Reset

# Getting Started

### REG 0: DTE Port Speed

```
 0 = 56K
 1 = 64K
 2 = 96K
 3 = 128K
 4 = 192K
 5 = 256K
 6 = 384K
 7 = 512K
 8 = 768K
 9 = 1024K (Factory Default)
10 = 1536K
11 = 2048K
```

This register sets the DTE port speed (the DTE port sources clocks and the DCE port accepts clocks up to 56Kbps for the 810 QP and up to 256Kbps for the 810/2 QP). Changes to this register do not take effect while the unit is on-line, it must be disconnected.

NOTE: A 1544K DTE clock is available with a factory upgrade

### REG 1: Bitmapped

| BIT | VAL | | DEFAULT | User |
|---|---|---|---|---|
| b7 | 128 | x | 0=000 | |
| b6 | 64 | x | 0=000 | |
| b5 | 32 | x | 0=000 | |
| b4 | 16 | x | 0=000 | |
| b3 | 8 | x | 0=000 | |
| b2 | 4 | x | 1=004 | |
| b1 | 2 | x | 1=002 | |
| b0 | 1 | x | 0=000 | |
| | | | =006 | |

bit 0 - Data encoding
= 0 NRZ encoding
= 1 NRZI encoding

bit 1 - Idle character
= 0 Mark idle (FF hex)
= 1 Flag idle (7E hex)

bit 2 - TXC clock gapping
= 0 Disable clock gapping
= 1 Enable clock gapping

bit 3 - RXC clock gapping
= 0 Disable clock gapping
= 1 Enable clock gapping

bit 4-7 - Reserved

Transmit clock gapping is a hardware technique for implementing flow control in a synchronous environment. Since the QP sources the transmit clock to the DTE and consequently controls the data flow *from* the DTE, it can effectively halt the flow of data at any instant by holding the clock signal in the state that it is in at that instant, i.e. not allowing transitions. Please note however that not all DTEs will support such an action. If the DTE device being used does not, then this option should be disabled. SET REG 1 2.

Receive clock gapping is a hardware technique for reducing latency in a synchronous environment. Since the QP sources the receive clock to the DTE and consequently controls the data flow *into* the DTE, it can effectively halt the flow of data at any instant by holding the clock signal in the state that it is in at that instant, i.e. not allowing transitions. This allows the QP to begin releasing decompressed data to the DTE sooner than it normally would (i.e., before it processes the end-of-frame). The net effect is an improvement in throughput and it is recommended that receive clock gapping be enabled. Please note however that not all DTEs will support such an action. If the DTE being used does not, then this option should be disabled.

**REG 2: Bitmapped**

| BIT | VAL | | DEFAULT | User |
|---|---|---|---|---|
| b7 | 128 | x | 0=000 | |
| b6 | 64 | x | 0=000 | |
| b5 | 32 | x | 0=000 | |
| b4 | 16 | x | 0=000 | |
| b3 | 8 | x | 0=000 | |
| b2 | 4 | x | 0=000 | |
| b1 | 2 | x | 0=000 | |
| b0 | 1 | x | 0=001 | |
| | | | =001 | |

bit 0 - DTE port's DTR control
= 0 Use DTR signal from DTE, DSR follows DTR
= 1 Ignore DTR from DTE

bit 1 - CTS follows RTS
= 0 Disabled
= 1 Enabled

bit 2-7 - Reserved

**REG 3: Auto-Dial Back**

0 = Disabled
1 = Enabled

Set to 1 when used with the 528 Sync Node to enable modem to dial from stored number position 0.

**REG 4: Reserved**

**REG 5: Backup Port Main Control Register**

```
    0  = Secondary port disabled
1-254  = Set Backup Master, Switchback delay in seconds
  255  = Set Backup Slave, Secondary port always active
```

This register controls the operation of the Secondary Port when configured as a Backup port only (Register 10 = 0), it has no effect on the Load Sharing function. When set to a value of 0, the Backup function is disabled, or not allowed. When set to a value between 1 and 254, this register designates the unit as the Backup Master. The Master is responsible for the initiation of the Backup connection upon detection of Primary link failure. When a Primary link failure is detected and the Master determines that backup is allowed (see Regs 6-9 below), it asserts DTR to the Backup device, signaling it to initiate a connection. Also, upon re-connection of the Primary link, the value in this register determines the number of seconds the Primary link must be active and error-free before the Master will switch data traffic back to the Primary and drop DTR to the Backup device. When set to a value of 255, this register designates the unit as the Backup Slave. The Slave Secondary port is always active. If the Primary link fails, the Slave takes no action. See the description of the Secondary port beginning on page 7.

**REG 6: Secondary Port Active Period - Start Day**

```
0 = Sunday
1 = Monday
2 = Tuesday
3 = Wednesday
4 = Thursday
5 = Friday
6 = Saturday
```

This register sets the start day for an active period of the Secondary Port. The Secondary port becomes enabled for the first time on this day at the time set in Register 8. It will remain enabled until the time set in Register 9 for each day of the active period.

**REG 7: Secondary Port Active Period - Stop Day**

0 = Sunday
1 = Monday
2 = Tuesday
3 = Wednesday
4 = Thursday
5 = Friday
6 = Saturday

This register sets the stop day for an active period of the Secondary Port. The Secondary port becomes enabled for the last time on this day at the time set in Register 8. It becomes disabled for the last time on this day at the time set in Register 9.

**REG 8: Secondary Port Active Period - Start Time (24-hour format, hour values only)**

0-12 = 12:00 a.m. - 12:00 p.m.
13-23 = 1:00 p.m. - 11:00 p.m.

This register sets the hour of each day during the active period(set in Registers 6,7) at which the Secondary port becomes enabled. This register operates in 24-hour format and therefore will only accept a value from 0-23, representing the 24-hour period of a day. Note also that a daily active period may only begin "on the hour", i.e., at 8:00 or 17:00, but not at 8:30, or 17:30 etc.

**REG 9: Secondary Port Active Period - Stop Time (24-hour format, hour values only)**

0-12 = 12:00 a.m. - 12:00 p.m.
13-23 = 1:00 p.m. - 11:00 p.m.

This register sets the hour of each day during the active period (set in Registers 6,7) at which the Secondary port becomes disabled. This register operates in 24-hour format and therefore will only accept a value from 0-23, representing the 24-hour period of a day. Note also that a daily active period may only end "on the hour", i.e., at 8:00 or 17:00, but not at 8:30, or 17:30 etc.

**REG 10: Secondary Port Function Select**

0 = Backup operation.
1 = Load sharing operation.

This register configures the Secondary port as either a Backup port or a Load sharing port.

### REG 12: Transparent Mode Enable Register

0 = Disable transparent mode.
1 = Enable transparent mode.

This register is used to set transparent mode.

### REG 20: Remote Configuration Request Register

0 = Disable remote configuration.
1 = Remote configuration negotiation requested.

This register controls the remote configuration option. Remote configuration allows the operator of an 800 series compressor to change the register settings of the remote 800 series compressor. This register must be set on both ends prior to establishing a connection in order for remote configuration to be negotiated.

# Getting Started

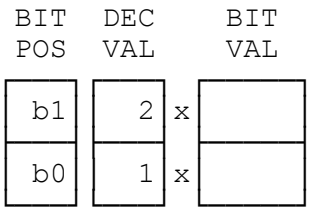
The diagnostic registers are read only registers which reflect the status of the QP. These registers may be numeric or bitmapped. The values in these registers are obtained with the SHOW REG(S) commands for the local unit or the SHOW REM command for remote units.

**REG 30: Remote Configuration Status Register(Read only)**

0 = Remote configuration not negotiated.
1 = Remote configuration negotiated.

This register indicates whether or not the remote configuration option has been negotiated.

**REG 40: DTE Port Signal Status(Read only) - Bitmapped**



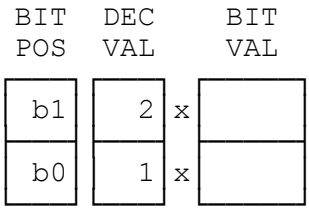

bit 0 - RTS signal status
= 0 Inactive
= 1 Active

bit 1 - DTR signal Status
= 0 Inactive
= 1 Active

bit 2-7 - Not used

This register reflects the status of the DTE port signals RTS and DTR. To check the status of RTS and DTR, read this register with the appropriate SHOW command. The value returned will be the sum of the bit value multiplied by the corresponding decimal value. For instance, if the value returned is a 2, then the DTR signal is active but the RTS signal is not(2x1 + 1x0 = 2).

**REG 41: Primary DCE Port Signal Status(Read only) - Bitmapped**




bit 0 - DCD signal status
= 0 Inactive
= 1 Active

bit 1 - CTS signal Status
= 0 Inactive
= 1 Active

bit 2-7 - Not used

This register reflects the status of the primary DCE port signals DCD and CTS. To check the status of DCD and CTS, read this register with the appropriate SHOW command. The value returned will be the sum of the bit value multiplied by the corresponding decimal value.

**REG 42: Secondary DCE Port Signal Status(Read only) - Bitmapped**

BIT DEC BIT

| POS | VAL | | VAL |
|---|---|---|---|
| b1 | 2 | x | |
| b0 | 1 | x | |

bit 0 - DCD signal status
= 0 Inactive
= 1 Active

bit 1 - CTS signal Status
= 0 Inactive
= 1 Active

bit 2-7 - Not used

This register reflects the status of the secondary DCE port signals DCD and CTS. To check the status of DCD and CTS, read this register with the appropriate SHOW command. The value returned will be the sum of the bit value multiplied by the corresponding decimal value.

# Getting Started

```
Command>show stat

Local Device:
    Revision: 5.XX
    S/N: 20100001
    Device ID: UNIT-1
    Device State: CONNECT

Remote Device:
    Revision: 5.XX
    S/N: 20100002
    Device ID: UNIT-2

Performance Statistics:
    Elapsed Time: 00:22:23
    Transmit   Raw: 0007200635    Compressed: 0000886232    Ratio: 8.12
    Receive    Raw: 0007200635    Compressed: 0000886232    Ratio: 8.12

Command>
```

**Box 1:** Sample Statistics Screen

The statistics screen is displayed using the SHOW STAT command (SHOW STATS will also work). The statistics screen is shown in 1. The local device statistics shown are: the

Firmware revision, the product serial number, the device ID (set with the SET ID command), and the device state (idle or connect). If the QP is in the connect state, then the remote device statistics displayed are the remote QP's firmware revision, its serial number, and its device ID.

Performance statistics begin accumulating from the time the device goes on-line. The first time that the SHOW STAT command is issued after going on-line, the performance statistics given are a snap of the statistics accumulated since the device went on-line. Each time the SHOW STAT command is issued, the performance statistics are reported and then cleared. Therefore, each time after the first, the statistics reported will be the statistics accumulated since the last SHOW STAT command.

NOTE: The time counter and the byte counters are subject to overflow. The time counter will overflow after 24 hours. The byte counters will overflow at 4,294,967,295. These counters do not overflow at the same time. If the reported statistics appear meaningless, another SHOW STAT command should be issued to clear the counters before attempting to evaluate performance.

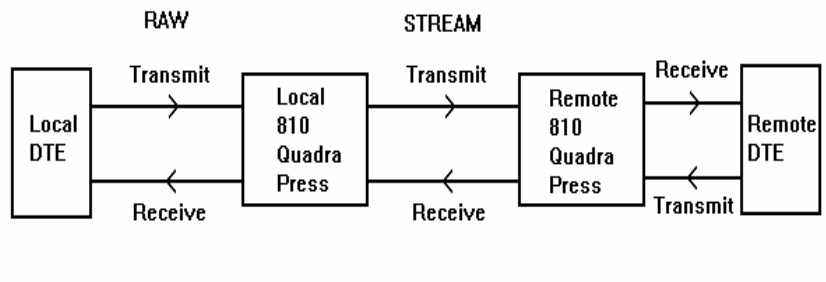



**Figure 2:** Statistics Block Diagram

## PERFORMANCE STATISTICS - Measured Values

Elapsed Time: The time in HOURS:MINUTES:SECONDS format that the statistics have been collected.

Transmit

Raw: The count of uncompressed bytes being sent into the local QP from the local DTE. See **2**.

Compressed: The count of compressed bytes being sent across the link by the local QP to the remote QP. See **2**.

Receive

Raw: The count of uncompressed bytes being received by local DTE from the local QP. See **2**.

Compressed: The count of compressed bytes being received across the link by the local QP from the remote QP. See **2**.

## PERFORMANCE STATISTICS - Calculated Values

System Performance can be further evaluated by calculating Throughput, Compression ratio, and Percentage of Line utilization from the measured (reported) performance statistics.

For the following calculations involving time, the elapsed time must be converted from the reported HOURS:MINUTES:SECONDS format to units of seconds only. Use the following formula for the conversion:

```
Elapsed time in seconds = (3600 x HOURS) + (60 x MINUTES) + SECONDS

EXAMPLE: Convert 3:26:11 to seconds
         (3600 x HOURS) + (60 x MINUTES) + SECONDS = Elapsed time in seconds
         (3600 x   3  ) + (60 x   26   ) +   11    = 12371 seconds
```

### Throughput

```
Throughput = (Raw Bytes x 8) / Elapsed time in seconds
```

# Getting Started

Throughput is a measure of the number of bits per second of raw data being passed from the local to the remote.

## Compression ratio

```
Compression ratio = Raw Bytes / Stream Bytes
```

Compression ratio is a measure of how much the raw data is being compressed.

## % Line utilization

```
% Line utilization = (((Stream Bytes x 8) / Elapsed time in seconds) / 56000) x 100
```

Line utilization is an indication of what fraction of the 56000 bps link bandwidth is being used.

# Getting Started

### Control Port Cable Pinout

| DB25 Female | | DB9 Male |
|---|---|---|
| 2 | TXD | 3 |
| 3 | RXD | 2 |
| 4 | RTS | 7 |
| 5 | CTS | 8 |
| 6 | DSR | 6 |
| 7 | GND | 5 |
| 8 | DCD | 1 |
| 20 | DTR | 4 |
| 22 | RI | 9 |

### RS-232(modem) Cable Pinout

| HD15 Male | | DB25 Male |
|---|---|---|
| 1 | Drain(hood) | 1 |
| 2 | TXD | 2 |
| 3 | RXD | 3 |
| 4 | RTS | 4 |
| 5 | CTS | 5 |
| 6 | DSR | 6 |
| 7 | GND | 7 |
| 8 | DCD | 8 |
| 10 | TXC | 15 |
| 12 | RXC | 17 |
| 15 | DTR | 20 |

### V.35 Cable Pinout

| HD15 Male | | V.35 Male |
|---|---|---|
| 1 | Drain(hood) | A |
| 2 | TXD-A | P |
| 3 | RXD-A | R |
| 4 | RTS | C |
| 5 | CTS | D |
| 6 | DSR | E |
| 7 | GND | B |
| 8 | DCD | F |
| 9 | TXD-B | S |
| 10 | TXC-A | Y |
| 11 | RXD-B | T |
| 12 | RXC-A | V |
| 13 | TXC-B | AA |
| 14 | RXC-B | X |
| 15 | DTR | H |

### X.21 Cable Pinout

| QP HD15F | | DTE HD15 | | DCE HD15 |
|---|---|---|---|---|
| 1 | Shield | 1 | | 1 |
| 2 | T | 2 | | 2 |
| 3 | R | 4 | | 4 |
| 4 | C | NC | | 3 |
| 5 | I | 5 | | NC |
| 6 | I | 12 | | NC |
| 7 | G | 8 | | 8 |
| 9 | T | 9 | | 9 |
| 10 | C | 3 | | 5 |
| 11 | R | 11 | | 11 |
| 12 | S | 6 | | 6 |
| 13 | C | 10 | | 12 |
| 14 | S | 13 | | 13 |

NC - No Connection

# Getting Started

# Getting Started

The following is a list of equipment that the 800 Series Quadra Press has been used with successfully as of April 1, 1995. This is NOT meant to be a definitive list, but instead is to serve simply as a list of compatible equipment.

**ROUTERS**

Cisco: AGS+, CGS, Models 2500, 3000, 4000, 7000
Wellfleet: LN, FN
Crosscom: I-LAN, XL-10, XL-20, XL-80
Proteon:
Retix: LANbridge 4000
3Com: Netbuilder
ACC
Ungerman Bass
CPS

# Technical Support

The Western DataCom Co., Inc. technical support group can be reached at (216) 835-1510 Monday through Friday (except holidays) between the hours of 8:00 a.m. - 5:30 p.m. Eastern Time.

When calling for technical support, please have the following information ready so that the applications engineer may be able to assist you in a timely manner:

- Product serial number
- Firmware revision
- Manual revision date (lower right corner of title page)
- Other equipment being used with the product
- Trouble experienced